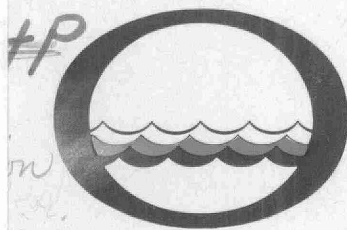


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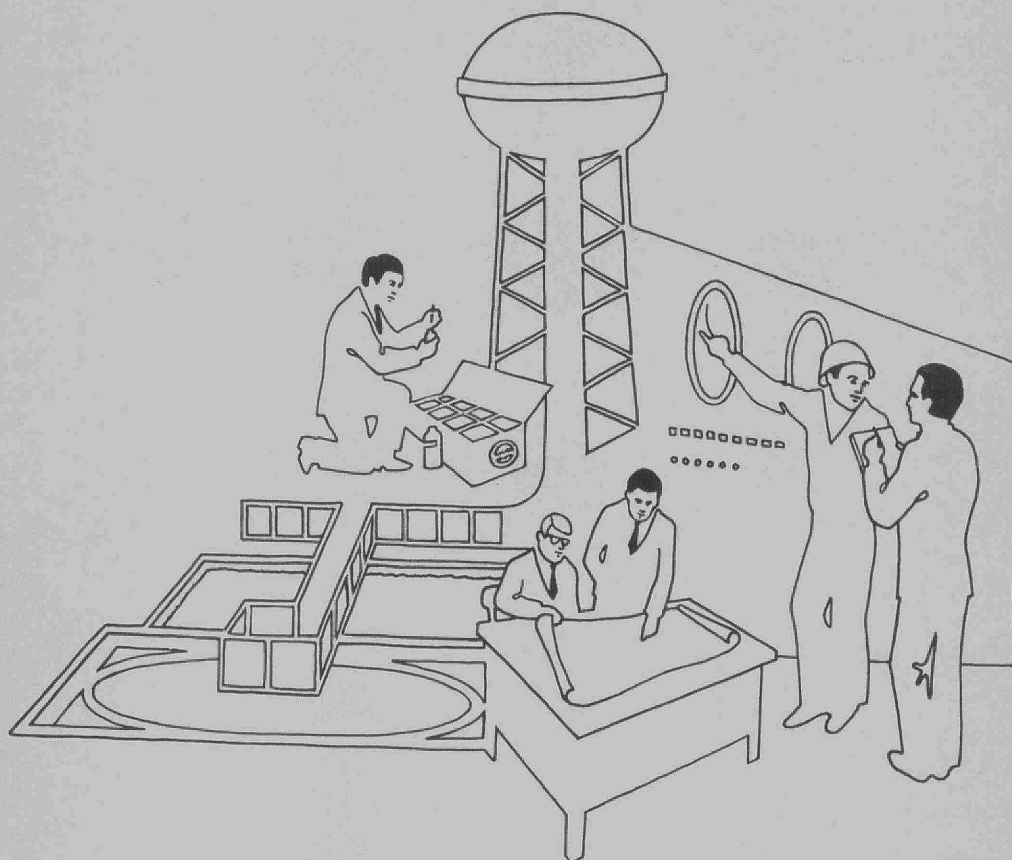
Water management in Ontario



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*Water Pollution
Survey*



WATER POLLUTION SURVEY
of the
HAMLET OF TURKEY POINT
COUNTY OF NORFOLK

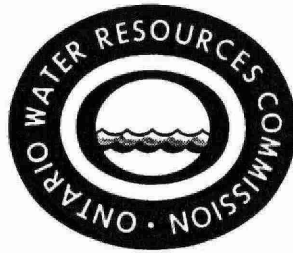
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REPORT

ON A

WATER POLLUTION SURVEY

OF THE

HAMLET OF TURKEY POINT

TOWNSHIP OF CHARLOTTEVILLE

COUNTY OF NORFOLK

1970

District Engineers Branch
Division of Sanitary Engineering

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Table 1 - Survey Analyses Results

Table 2 - Water Table and Soil

Table 3 - Health Unit: Beach Sample Examination Results

Appendix A - Interpretation and Significance of Analyses Results

Appendix B - Implementation of Water and Sewage Works Programmes
- Community Planning

ONTARIO WATER RESOURCES COMMISSION

REPORT

INTRODUCTION:

A water pollution survey of surface water quality, and a water table study in the Hamlet of Turkey Point were conducted in September 1970. The former consisted of locating storm and surface water drain outfalls and sampling the effluent being discharged as well as sampling at representative points in the man-made channels located at the southerly end of the hamlet. The latter consisted of placing six-inch diameter holes at representative locations throughout the hamlet and allowing the ground water to seek its own level within the hole, and subsequently scaling the depth below the existing grade of the land. Mr. W. K. Bingleman, Clerk-Treasurer, Township of Charlotteville, supplied a map of the municipality. The locations of sampling points, drains and holes dug to determine the water table are indicated on this map, a copy of which is provided with this report.

The Ontario Water Resources Commission conducts routine water pollution surveys throughout the Province for the purpose of locating, recording and evaluating sources of existing and potential pollution to watercourses. Existing sewers and surface water drains are located and water samples are collected. These samples are then analysed to determine the quality of the effluent that is being discharged into the receiving waters and its effect on the receiving waters. Where pollution sources are found,

recommendations and suggestions for abatement are made to the authorities concerned.

Where pollution control works appear desirable, the OWRC has introduced a programme of assistance in the construction and financing of these works. (This programme is outlined in Appendix B attached to this report.)

GENERAL:

Initially, the Hamlet of Turkey Point was conceived as a summer resort area. It is located in the Township of Charlotteville, County of Norfolk, with the population varying as to the season with peak occupancy during the summer months. There are approximately 750 dwellings, of which presently about 85 plus a 14-unit motel are used as year-round residences. During recent years there has been a tendency to "winterize" the cottages and use them for year-round occupancy.

The Hamlet is bounded to the north-west by a steep sand bluff approximately 50 feet in height, to the south-east by Lake Erie into which most drainage flows directly, and to the south-west by swamp land.

Much of Turkey Point has been reclaimed from swamp and marsh land, using sand as a major landfill. However, in many areas the lower fill contains debris such as tires, scrap metal, wood and other materials normally found in a dump. This was found to be the case while test holes were being dug to locate the water-table.

Due to the low-lying nature of the area and the proximity of Lake Erie, the water-table is very close to the surface throughout Turkey Point. This high-water table is not suitable for the efficient functioning of septic tank field tile disposal beds, particularly during spring run-off or a rainfall.

It was reported by a number of cottage owners that their lots flood during a strong east wind, and this interferes with the operation of the disposal areas.

WATER SUPPLY:

Turkey Point receives its water supply from seven private water works, the largest being that owned by Mr. W. W. Bowen with a summer service of approximately 425 cottages and a smaller number of winter services. The remaining water works are Green Cottages W.W., Turnbull W.W., Cedar Drive W.W., Burch W.W., Ronson Association W.W. and Walter St. W.W. Reportedly, these systems supply water only during the summer season. In addition, a small number of residences, located at the extreme north-easterly end of the Hamlet, have individual systems drawing water from springs emerging from the bluff.

In general, the water supply systems may at best, be classed as marginal for summer use; however, due to small diameter mains, fluctuating water quality and in some cases poor supervision, these systems are considered as sub-standard to be utilized as year-round supplies.

As mentioned earlier, there has been a tendency by residents during recent years to "winterize" their cottages for use as year-round residences or retirement homes. At this time, however, it is reported that only the Bowen system supplies water on a year-round basis. This is the only system that obtains its water from Lake Erie (other supplies use wells and springs), and during the winter the water only receives settling, filtration and batch chlorination prior to distribution for consumption.

SEWAGE TREATMENT FACILITIES:

The Hamlet of Turkey Point does not have communal sewage collection and treatment facilities. Individual septic tank systems are utilized for the disposal of sanitary wastes. In many cases, these systems do not operate effectively and there is a frequency of sewage back-up due to the very high water-table which does not permit adequate drainage from the tile beds, particularly during high lake levels, east winds, rains or spring run-offs. A list of water table levels is provided in Table 2.

Also, in parts of the Municipality, sufficient space is not available for the installation of adequate field tile disposal beds due to small lot sizes and close formation. Consequently, direct connections from private disposal units to surface water drainage facilities have been made. This has resulted in the discharging of septic tank effluent into the local drainage system which flows into Lake Erie.

The affects of the unsatisfactory arrangements described above have been investigated by the Haldimand-Norfolk Health Unit by means of an intensive beach sampling programme conducted throughout the summer of 1970. The survey results (See Table 3) reveal gross pollution of the bathing areas at Turkey Point. The Health Unit considers this a real problem and has indicated that the beaches will be placarded next year in order to warn bathers of the potential health hazard.

INDUSTRIAL WASTES:

The municipality consists entirely of residential and commerical assessment with no "wet" industries producing large volumes of wastewater requiring treatment.

WATER TABLE AND SOIL:

A series of twenty 6" diameter holes were dug in Turkey Point at representative locations until the water-table was reached. The water in these holes was then allowed to reach a static level and a water-table depth, with respect to the existing grade, was recorded. Also, where possible, water-table depth was obtained from recent excavations and private digging in progress by local cottagers. It must be remembered, however, that in September, when the survey was conducted, the water-table was at one of its lowest levels of the year and therefore not representative of worse conditions which occur during the spring and early summer months when the water-table is higher.

ANALYSES RESULTS:

Table I, appended, shows the analyses results of samples collected during the September survey, conducted by OWRC staff. Appendix A gives an interpretation of and explains the significance of analyses results.

It should be noted that, although at the time of this survey the summer season was virtually over and the population at Turkey Point was far from its summer peak, a number of sources discharging high levels of pollution to Lake Erie were located. In addition, many of the samples contained residual concentrations of detergents, indicating that sanitary sewage had at one time gained access to the local watercourses.

An extremely high level of pollution was located at sampling points ① and ②. Further investigation revealed that this was due to sanitary sewage being discharged directly to the surface water drainage system upstream of the sampling locations. Further evidence of similar direct discharges was found in other surface water drains examined.

Samples collected from swampy areas such as samples ⑨ and ⑩ again revealed the presence of domestic sewage. Sanitary wastes were probably being conveyed into these areas by the ground water into which septic tank effluent is discharged. This would lead to the conclusion that the ground water contains a high level of pollution from malfunctioning septic tank systems. This also probably contributes to the pollution of the local bathing areas and could conceivably be a source of contamination to at least

one of the well supplies in the Hamlet.

The Haldimand-Norfolk Health Unit conducted an extensive sampling programme of the bathing areas of Turkey Point throughout the summer of 1970 (See Table 3 for sample results). Examination results indicate that all areas sampled were polluted, and in most instances to such a high degree, that the Health Unit is planning to placard the beaches to warn bathers of the potential health hazard of swimming at Turkey Point. The presence of faecal coliform organisms (which originate in the intestinal tracts of humans and animals) in the samples examined, confirms that the pollution was being caused by sanitary sewage gaining access to the beaches.

As mentioned previously in this report, sanitary sewage is gaining access to the surface water drainage system and subsequently to the lake because of:

(1) inadequacy of septic tank systems. This is particularly due to the low-lying swampy nature of the area and the extremely high water-table in the soil, all of which does not lend itself to the suitable operation of field tile disposal systems. Also, in some areas of the Hamlet, sufficient space is not available for the installation of adequate field tile disposal beds. The lack of land area and the unsatisfactory soil conditions for retention disposal has, in some cases, necessitated the discharge of overflow from septic tanks and from tile beds directly into the surface water drainage system. In addition, septic tank effluent is conveyed by the ground water and eventually also finds its way into surface waters.

(2) It is also probable that there is direct discharge of sanitary sewage and domestic waste through private drains into the surface water drainage system. Laundry and kitchen sink wastes are probably being disposed of in this manner, which could account for the presence of ABS (detergents) in some of the surface water samples analysed. However, septic tank effluent can also contain concentrations of ABS.

The discharge of polluting materials into a drainage system or watercourse constitutes a violation of regulations under The Ontario Water Resources Commission Act, Section 27, Subsection 1.

SUMMARY AND CONCLUSIONS:

This is a report on a water pollution survey carried out in the Hamlet of Turkey Point, the purpose of which was to locate existing and potential sources of water pollution in the community. The survey was conducted in 1970 and the report is based on observations of field surveys, including the determination of the height of the water-table throughout the Hamlet, as well as results of chemical analyses and bacteriological examinations of water samples collected at that time. In addition, the findings of a comprehensive sampling survey conducted throughout the summer of 1970 by the Haldimand-Norfolk Health Unit were utilized to supplement the findings of this survey.

The surveys revealed that sanitary sewage from the Municipality is constituting a serious pollution problem in Turkey Point and in the adjacent bathing areas of Lake Erie. In addition, the ground water, which at least one of the local water works

utilizes as a source of supply, is likely being contaminated by sanitary sewage.

The problem is due to the low-lying nature of the area and an extremely high water-table, all of which precludes the satisfactory operation of septic tank systems. Development on small lots in parts of the Municipality further aggravates the problem.

It should be noted that in recent years there has been a trend to "winterize" the summer cottages for use on a year-round basis. This is resulting in a much greater load being imposed on the already malfunctioning individual sewerage systems, further magnifying the pollution problem. Therefore, further development on septic tank systems or "winterizing" of existing dwellings should be discontinued.

Corrective action is required in order to alleviate the present conditions of pollution. Because of the swampy nature of this area and some lot-size limitations, corrective measures on an individual basis will likely prove unsuccessful. One measure which might be explored is the construction of holding tanks with haulage to another area for disposal. However, should this not prove to be feasible, then a communal sewage collection and treatment system will be required. It is also recommended that in conjunction with a sewerage works project, the construction of a satisfactory communal water supply system should also be given serious consideration.

RECOMMENDATIONS:

A pollution abatement programme resulting in adequate sewerage facilities in Turkey Point should be embarked upon as soon as possible.

Prepared by:

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A. Burlachenko, C.E.T.

Technologist

Division of Sanitary Engineering

TABLE IHAMLET OF TURKEY POINTWATER POLLUTION SURVEY

Sampling Point No.	Description of Sampling Points	5-Day BOD (ppm)	<u>S O L I D S</u>			Anionic Detergent as ABS (ppm)	Coliforms per 100 ml. (M.F.) Total
			Total	Susp.	Diss.		
1	Outfall to Ditch at Isabel Street	180.	2360	2020	340	7.0	48,000,000
2	Isabel St. Ditch at Lake Erie	50.	1100	850	250	0.3	213,000
3	Stream South of Turkey Pt. Hotel	1.0	250	5	245	0.0	11,000
4	Turkey Pt. Road Drain Outfall at Lake Erie	0.8	260	25	235	0.0	710
5	Drain Outfall to Lake Erie South of Lot "B" - R.P. 135	1.8	320	10	310	0.0	810
6	Drain Outfall to Lake Erie between Lots "F" and "G" - R.P. 135	0.6	660	340	320	0.0	710
7	Drain Outfall to Lake Erie between Lots "G" and "H" - R.P. 135	2.0	450	40	410	0.0	87,000
8	Stream at Cedar Drive East of Albert Street	1.6	230	5	225	0.0	200,000

TABLE IHAMLET OF TURKEY POINTWATER POLLUTION SURVEY

Sampling Point No.	Description of Sampling Points	5-Day BOD (ppm)	<u>S O L I D S</u>			Anionic Detergent as ABS (ppm)	Coliforms per 100 ml. (M.F.) Total
			Total	Susp.	Diss.		
9	Walmsley St. - East Swamp	6.5	620	5	615	0.1	120,000
10	Walmsley St. - West Swamp	20.0	560	160	400	0.1	3,900
11	Block "A" Channel at Reserve St.	1.8	240	5	235	0.0	130
12	Block "A" Channel at Lot 1	2.0	240	5	235	0.0	220
13	Outfall to Block "B" Channel at Reserve St.	4.5	290	30	260	0.1	5,000
14	Block "B" Channel - Opposite Lot 61	1.8	220	5	215	0.0	80
15	Block "B" Channel - Opposite Lot 43	1.6	200	5	195	0.1	80
16	Channel at Foot of Wallace St.	1.6	160	10	150	0.1	900

TABLE 2

HAMLET OF TURKEY POINTWATER TABLE AND SOIL

Hole No.	Location	Water Table Depth from Existing Grade	Soil Conditions as Noted Below Grade	Notes
1	Cedar Drive at Turkey Point Provincial Park	2'-4"	0-2'4"	
2	Albert Street at Eastern Foot	2'-0"	0-2'0"	Adjoining lots raised approx. 1 ft. to accommodate field tile beds.
3	Ridgewood Drive North of Crestwood Ave.	2'-0"	0-2'0" Sand- Peat Mix	Area was originally swamp, which has been reclaimed by sand fill.
4	Cedar Drive at Parkwood Ave.	2'-6"	0-2'6" Sand	Residential lots are approx. 6" lower than the elevation of Cedar Drive.
5	Ridgewood Drive at Southern Extent West of Cedar Dr.	3'-3"	0-3'3" Sand	
6	Tyler Street at Eastern Foot	4'-0"	0-4'0" Sand	
7	Elm Street at Western Extent	3'-3"	0-3'3" Sand	Surrounding area reclaimed from Swamp.

TABLE 2HAMLET OF TURKEY POINTWATER TABLE AND SOIL

Hole No.	Location	Water Table Depth from Existing Grade	Soil Conditions as Noted Below Grade	Notes
8	Ferris Street at Oronance Ave.	4'-0"	0-4'0" Sand	Neighbouring lots built up to a maximum of 1 ft. to accommodate field tile beds.
9	Oronance Ave. Northern Region Lot 168	2'-6"	0-2'6" Sand	Low-lying area, subject to ponding.
10	Ridgewood Road at Landon Street	1'-6"	0-0'3" Loam 0'3"-1'6" Sand	Bore-hole was made in low-lying area. Ridgewood Road approx. 2'6" higher in elevation than grade at sampling point, making ground water elevation 4'0" below Ridgewood Road.
11	Turkey Point Road at Walmsley Street	3'-9"	0-3'9" Sand	
12	Reserve Street at Ridgewood Road	2'-8"	0-2'8" Sand	Lots are built up approx. 1 ft. west of Reserve St.

TABLE 2

HAMLET OF TURKEY POINTWATER TABLE AND SOIL

Hole No.	Location	Water Table Depth from Existing Grade	Soil Conditions as Noted Below Grade	Notes
13	Reserve Street at Lot 50 midway between Ridgewood Road and Oronance Ave.	2'-8"	0-2'8" Sand	
14	Walmsley Street Eastern Extent	2'-6"	0-0'6" Fine Sand 0'6"-2'6" Organic 2'6" + Sand	Surrounding area is very swampy and undeveloped with two ponds present. Water Street is non- existent.
15	Oronance Ave. midway between Reserve Street and Ferris Street.	2'-0"	0-2'0" Sand	Road elevation 1 ft. higher than lot elevation.
16	Bristol Street Lot 58	2'-3"	0-3'0" Sand-Top- soil Mix 3'0"-3'2" Clay 3'2" + Sand	Area subject to ponding.
17	Wallace Street Western Extent	2'-0"	0-3'0" Sandy Clay 3'0"-4'0" Clay 4'0" + Sand	

TABLE 2HAMLET OF TURKEY POINTWATER TABLE AND SOIL

Hole No.	Location	Water Table Depth from Existing Grade	Soil Conditions as Noted Below Grade	Notes
18	Duncan Street Lot 100	2'-0"	0-2'0" Sandy Loam	Water in nearby channel has been and Clay known to rise high enough to Mix (Fill) cover surrounding area.
19	Harold Street at Cedar Street Lot 2	1'-6"	0-1'6" Sand	
20	Harold Street at Cedar Street Lot 29	1'-4"	0-1'4" Sand	Water-table has been known to be within 2" of surface as per local cottage owners.
<u>Obser- vation No.</u>				
1	R.P. 135, Lot A, Northern Tip of of Hamlet	3'-0"	0-3'0" Sand	Trailer Camp was installing winter water-line. Water-table was exposed. Area has been known to flood during high easterly winds from the lake.

TABLE 2HAMLET OF TURKEY POINTWATER TABLE AND SOIL

Observation No.	Location	Water Table Depth from Existing Grade	Soil Conditions as Noted Below Grade	Notes
2	Harold Street at Lot 25	1'-0"	Sand	Local cottage owner supplied information regarding water-table depth and soil conditions.
3	Walter Street at Lot 1	1'6"-2'6"	Sand	Information obtained from local cottage owner
4	Walter Street at Lot 5	1'-6"	0-1'6" Sandy Loam	Information obtained from bore-holes placed by Local Health Unit.
5	Head Street at Quaker Street	2'-0"	0-2'0" Sand	Water-table was exposed due to excavation for waterline extension.
6	Quaker Street at Lot 5	2'-6"	0-1'6" Sand 1'6"-2'6" Loam	Water-table was exposed due to excavation for waterline extension.

TABLE 3

HAMLET OF TURKEY POINTHALDIMAND-NORFOLK HEALTH UNIT BEACH SAMPLES

Sampling Point No.	Description of Sampling Points	Date Sampled	Total Coliforms Per 100 ml. (M.F.)	Faecal Coliforms Per 100 ml. (M.F.)
1	Stream far East Corner of Park	11 May 70	80	80
		25 May 70	8,000	1,400
		2 June 70	2,200	330
		8 June 70	5,500	430
		22 June 70	5,400	300
		6 July 70	8,000	500
		21 July 70	8,000	8,000
		27 July 70	6,000	400
		2 Aug. 70	8,000	4,400
		10 Aug. 70	8,000	16
		25 Aug. 70	8,000	3,300
2	Lake Directly Opposite Stream	11 May 70	80	12
		25 May 70	370	20
		2 June 70	420	26
		8 June 70	5	0
		22 June 70	300	12
		6 July 70	7,300	100
		21 July 70	6,100	26
		27 July 70	900	14
		2 Aug. 70	900	44
		10 Aug. 70	36	13
		25 Aug. 70	500	10

TABLE 3

HAMLET OF TURKEY POINTHALDIMAND-NORFOLK HEALTH UNIT BEACH SAMPLES

Sampling Point No.	Description of Sampling Points	Date Sampled	Total Coliforms Per 100 ml. (M.F.)	Faecal Coliforms Per 100 ml. (M.F.)
3	Lake opposite Lifeguard Stand	11 May 70		
		25 May 70	150	18
		2 June 70	175	18
		8 June 70	10	2
		22 June 70	600	6
		6 July 70	8,000	100
		21 July 70	600	44
		27 July 70	1,200	4
		2 Aug. 70	50	4
		10 Aug. 70	200	48
		25 Aug. 70	1,600	38
4	Lake opposite Main Gate	11 May 70	44	0
		25 May 70	260	12
		2 June 70	70	30
		8 June 70	270	0
		22 June 70	100	22
		6 July 70	4,500	14
		21 July 70	1,800	12
		27 July 70	2,000	14
		2 Aug. 70	2,000	100
		10 Aug. 70	28	10
		25 Aug. 70	1,700	70

TABLE 3

HAMLET OF TURKEY POINTHALDIMAND-NORFOLK HEALTH UNIT BEACH SAMPLES

Sampling Point No.	Description of Sampling Points	Date Sampled	Total Coliforms Per 100 ml. (M.F.)	Faecal Coliforms Per 100 ml. (M.F.)
5	Lake Opposite Women's Change Booth	11 May 70	48	2
		25 May 70	50	12
		2 June 70	115	36
		8 June 70	40	2
		22 June 70	1,400	26
		6 July 70	3,500	40
		21 July 70	3,500	10
		27 July 70	3,200	16
		2 Aug. 70		
		10 Aug. 70	16	4
		25 Aug. 70	90	4
6	Lake Opposite Boat Ramp	11 May 70		
		25 May 70	230	16
		2 June 70	70	40
		8 June 70	25	2
		22 June 70	500	4
		6 July 70	2,300	60
		21 July 70	7,500	8
		27 July 70	2,300	2
		2 Aug. 70	600	2
		10 Aug. 70	64	8
		25 Aug. 70	82	10

TABLE 3

HAMLET OF TURKEY POINTHALDIMAND-NORFOLK HEALTH UNIT BEACH SAMPLES

Sampling Point No.	Description of Sampling Points	Date Sampled	Total Coliforms Per 100 ml. (M.F.)	Faecal Coliforms Per 100 ml. (M.F.)
7	Lake between Boat Ramp and Albert Street	11 May 70	460	12
		25 May 70	260	14
		2 June 70	290	78
		8 June 70	25	6
		22 June 70	1,400	56
		6 July 70	4,000	100
		21 July 70	1,500	64
		27 July 70	8,000	16
		2 Aug. 70	96	2
		10 Aug. 70	40	0
		25 Aug. 70	44	6
8	Stream East of Albert Street	11 May 70	175	52
		25 May 70	2,800	500
		2 June 70	2,000	260
		8 June 70	1,282	82
		22 June 70	5,600	600
		6 July 70	8,000	4,100
		21 July 70	8,000	8,000
		27 July 70	8,000	7,100
		2 Aug. 70	8,000	2,200
		10 Aug. 70	8,000	3,700
		25 Aug. 70	8,000	8,000

TABLE 3

HAMLET OF TURKEY POINTHALDIMAND-NORFOLK HEALTH UNIT BEACH SAMPLES

Sampling Point No.	Description of Sampling Points	Date Sampled	Total Coliforms Per 100 ml. (M.F.)	Faecal Coliforms Per 100 ml. (M.F.)
9	Lake opposite Stream East of Albert Street	11 May 70		
		25 May 70	110	14
		2 June 70	115	4
		8 June 70	90	0
		22 June 70	1,300	7
		6 July 70	8,000	2
		21 July 70	8,000	700
		27 July 70	400	2
		2 Aug. 70	90	2
		10 Aug. 70	200	2
		25 Aug. 70	12	6
10	Lake opposite Albert Street	11 May 70	20	0
		25 May 70	160	64
		2 June 70	220	64
		8 June 70	55	0
		22 June 70	1,100	28
		6 July 70	2,400	2
		21 July 70	6,000	16
		27 July 70	0	0
		2 Aug. 70	24	2
		10 Aug. 70	300	18
		25 Aug. 70	4	2

TABLE 3

HAMLET OF TURKEY POINTHALDIMAND-NORFOLK HEALTH UNIT BEACH SAMPLES

Sampling Point No.	Description of Sampling Points	Date Sampled	Total Coliforms Per 100 ml. (M.F.)	Faecal Coliforms Per 100 ml. (M.F.)
11	Lake east of Tyler Street	11 May 70		
		25 May 70	75	4
		2 June 70	60	32
		8 June 70	5	0
		22 June 70	600	32
		6 July 70	8,000	100
		21 July 70	86	8
		27 July 70	48	2
		2 Aug. 70	100	2
		10 Aug. 70	94	4
		25 Aug. 70	16	4
12	Lake opposite Tyler Street	11 May 70		
		25 May 70	70	2
		2 June 70	150	28
		8 June 70	55	2
		22 June 70	160	34
		6 July 70	2,200	2
		21 July 70	4,900	18
		27 July 70	2	2
		2 Aug. 70	80	2
		10 Aug. 70	66	4
		25 Aug. 70	14	4

TABLE 3

HAMLET OF TURKEY POINTHALDIMAND-NORFOLK HEALTH UNIT BEACH SAMPLES

Sampling Point No.	Description of Sampling Points	Date Sampled	Total Coliforms Per 100 ml. (M.F.)	Faecal Coliforms Per 100 ml. (M.F.)
13	Lake west of Tyler Street	11 May 70	12	0
		25 May 70	130	2
		2 June 70	130	38
		8 June 70	10	0
		22 June 70	400	26
		6 July 70	3,500	0
		21 July 70	80	14
		27 July 70	1,400	2
		2 Aug. 70	24	4
		10 Aug. 70	44	10
		25 Aug. 70	16	4
14	Lake east of Oronance Ave.	11 May 70		
		25 May 70	410	2
		2 June 70	160	80
		8 June 70	5	4
		22 June 70	1,200	100
		6 July 70	8,000	8
		21 July 70	4,500	36
		27 July 70	60	10
		2 Aug. 70	68	8
		10 Aug. 70	10	0
		25 Aug. 70	16	4

TABLE 3HAMLET OF TURKEY POINTHALDIMAND-NORFOLK HEALTH UNIT BEACH SAMPLES

Sampling Point No.	Description of Sampling Points	Date Sampled	Total Coliforms Per 100 ml. (M.F.)	Faecal Coliforms Per 100 ml. (M.F.)
15	Lake opposite Privy on Oronance Ave.	11 May 70	0	0
		25 May 70	100	0
		2 June 70	130	88
		8 June 70	25	0
		22 June 70	700	36
		6 July 70	2,100	0
		21 July 70	104	16
		27 July 70	8	2
		2 Aug. 70	72	6
		10 Aug. 70	8	6
		25 Aug. 70	12	12

APPENDIX A

INTERPRETATION AND SIGNIFICANCE OF ANALYSES RESULTS:

For convenience in the interpretation of laboratory analyses results, the Ontario Water Resources Commission water quality objectives for surface water drains and watercourses are listed as follows:

Bacteriological Examination:

The membrane filter (MF) technique is employed at OWRC Laboratories to obtain a direct enumeration of coliform organisms and is reported per 100 millilitres (ml) of the sample.

The presence of coliforms may indicate pollution from both fecal and non-fecal sources while E.Coli organisms indicate pollution of intestinal origin only.

Sanitary Chemical Analyses:

Biochemical Oxygen Demand (BOD)

The BOD of sewage or polluted waters is the oxygen required during stabilization of the decomposable organic material by aerobic biochemical action. A five-day BOD determination with incubation at 20 degrees Centigrade is reported. A high BOD is indicative of organic or chemical pollution. A desirable upper limit in surface water is four (4)* parts per million (ppm) while the objective maximum in waste discharges to a watercourse is 15 ppm.*

* See next page.

Solids:

The value for total solids, expressed in parts per million (ppm), is the sum of the values for the suspended and dissolved matter in water. The concentration of suspended solids which indicates the measure of undissolved solids of organic or inorganic nature is generally the most significant of the solids analyses in regard to surface water quality. The effects of suspended solids in water are reflected in difficulties associated with water purification, deposition in streams, and injury to the habitat of fish. The OWRC's objective for discharge is a suspended solids concentration of not greater than 15 ppm.*

Alkyl Benzene Sulfonate (ABS)
(Anionic Surfactant) - - - - -

The surfactant is a synthetic organic chemical which is used as a principal ingredient of modern household detergents. The popular use of synthetic detergents for general cleaning purposes has resulted in the incidence of residual ABS in waste discharges. Therefore, the presence of detergents in water samples is usually an indication of pollution from domestic sources.

* Under very restrictive environmental conditions such as low stream flow or intensive water use, these quality criteria and effluent requirements may have to be up-graded or become more restrictive.

APPENDIX B

IMPLEMENTATION OF WATER AND SEWAGE WORKS PROGRAMMES

Currently, there are three general methods which may be utilized for implementing sewage and water works programmes. These are: 1) to enter into an agreement with the OWRC for the construction of the treatment and collector works with an obligation to pay the debt retirement and operating charges over the term of the agreement with the facility reverting to the municipality at the end of the term of the agreement, 2) by requesting the provision of service from a Provincially-owned project, and 3) by proceeding with the construction independently and meeting capital costs by the sale of debentures.

OWRC/MUNICIPAL PROJECTS

For the construction of water and sewage works under agreement with this Commission, the works are provided and developed under Sections 39 to 46 of the Ontario Water Resources Commission Act.

For this type of arrangement, the Commission utilizes a sinking fund and consequently the annual payments are based on a specific debt retirement period and the payments are unchanged for the period of the agreement. This type of project may be financed over a period of time up to a maximum of thirty years. The annual charges for projects constructed under this agreement are determined as follows:

II

1. Capital Repayment

As noted, OWRC financing is by the sinking fund method and an annual payment of approximately 2 per cent of the capital cost is required to retire a debt over a thirty-year period.

2. Interest

On new Commission projects, interest is calculated at the current rate.

3. Reserve Fund

To provide money for repairs and replacements, Section 40 of The Ontario Water Resources Commission Act provides for the establishment of a reserve fund by the Commission. It is important to note that this fund is established in the name of the municipality and the balance consequently earns interest. It has now been established by Commission minutes that the reserve fund billing for each project shall continue only until the fund reaches an amount of ten times the initial annual billing and the reserve fund billing shall be re-imposed only when the fund has been depleted to 80 per cent or less of the maximum amount.

III

4. Operating Costs

Under OWRC agreement, the municipality is responsible only for the operating costs directly attributed to the project in the municipality. Therefore, no charges are made by the Commission for the services of head office personnel who are available as required to advise on the satisfactory operation and maintenance of the project.

PROVINCIALY-OWNED WORKS

In June 1967, the Honourable J. R. Simonett, Minister of Energy and Resources Management, made an announcement which expanded the authorization of this Commission for the provision of water supply and sewage treatment facilities. This new programme allows the Commission to construct entire water and sewage works facilities for small municipalities. The capital costs of these can be amortized over a 40 year period.

A slight variation of this programme could be implemented in that the municipality may request that this Commission provide only the major water and sewage works facilities as Provincially-owned works, and develop the water distribution and sewage collector systems under the standard type of Commission project. It would appear that, where applicable, it would be more advantageous for the municipality to proceed on the basis of requesting this Commission to develop entire systems as Provincially-owned works.

The associated cost of supplying these works, including amortization of capital costs, together with operating and maintenance charges, will be recovered by the sale of service to the affected municipalities by rates determined on a usage basis. These facilities will be wholly-owned by the Province of Ontario and the arrangements for service will be formalized by contracts between the Commission and the municipality concerned. The installations will be operated entirely at cost with appropriate provision for adjustment in rate.

COMMUNITY PLANNING

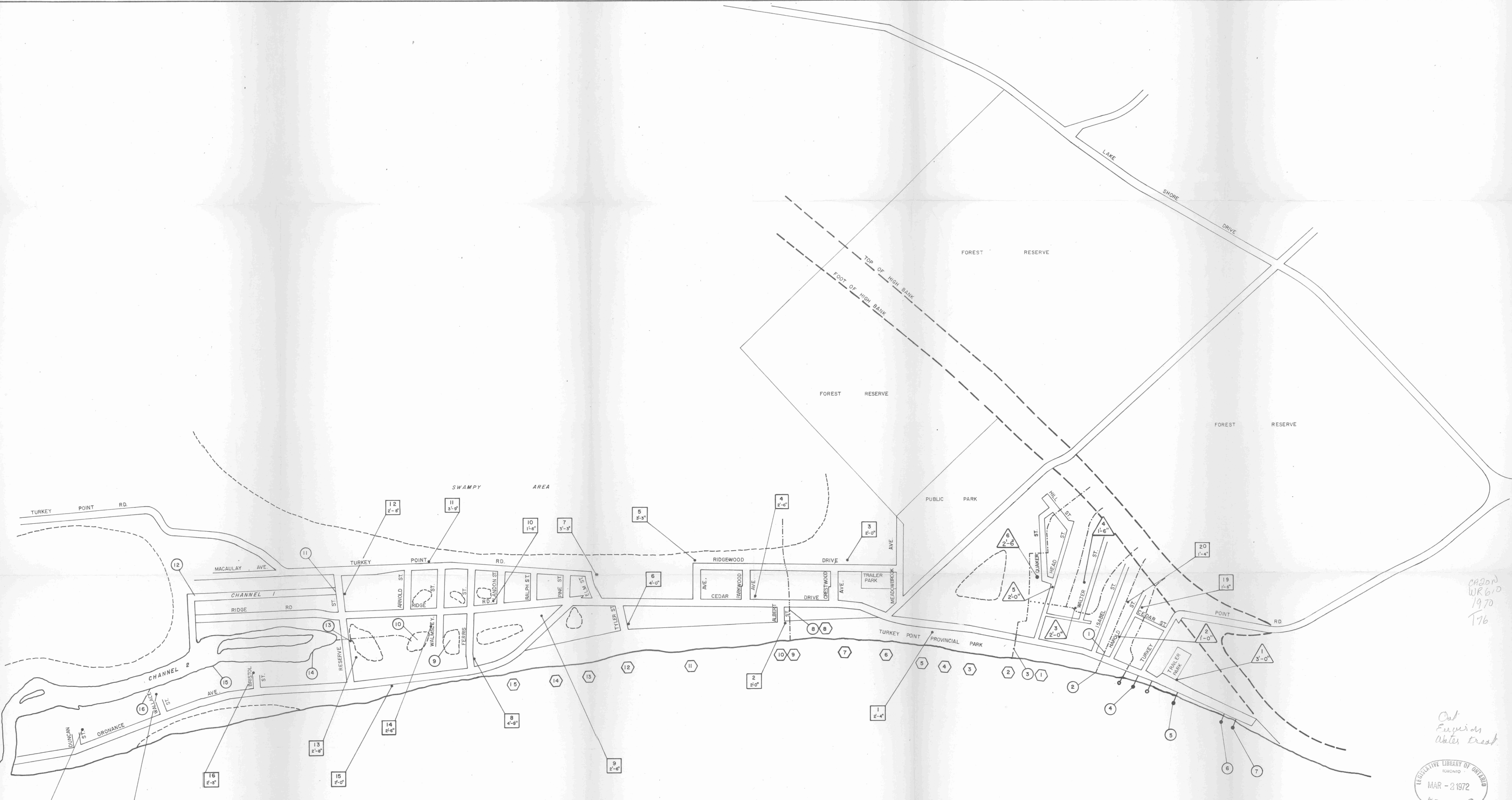
The need for effective planning has become more important today than ever before. Municipalities are being burdened with the rising costs of land and labour. Therefore, any project a community hopes to develop should be based on sound planning. Planning at all levels of government is essential but, community planning can be most effective if interest and initiative is generated at the local level. The enormous benefits accrued as a result of good planning can more than compensate for the initial investment.

Community planning can be described as an effort to control and direct development effectively. This can best be achieved through the development of an official plan. An official plan is the stated intention of the local authorities with respect to orderly development within the planning area, that is prepared

and set forth with professional assistance and meets the requirements as set out by the Provincial Planning Act. An official plan can be a joint effort by a number of municipalities which have common basic characteristics and common problems, or one municipality can establish a plan on its own initiative.

Orderly development yields future economy in services. Development in the community can be retarded where an official plan does not exist. A plan provides, among other things, the framework for the rational design of water and sewage works and also the extensions of mains and collector sewer systems.

A local council having decided to proceed with a programme of community planning definitely should contact the Ontario Department of Municipal Affairs. Through its many branches, information and guidance is provided to all interested parties.



CA200
WR610
1970
176

Out
Exposed
Water Level



LEGEND

- ② - SAMPLE POINT
- - BORE HOLE & GROUND WATER DEPTH.
- △ - OBSERVED GROUND WATER DEPTH
- ⑤ - HEALTH UNIT SAMPLE POINT
- - SWAMPY AREA
- - - - - OPEN DRAIN OR STREAM
- COVERED DRAIN
- OUTFALL (NOT FLOWING)
- OUTFALL (FLOWING)

ONTARIO WATER RESOURCES COMMISSION	
HAMLET OF TURKEY POINT TWP. OF CHARLOTTEVILLE WATER POLLUTION SURVEY 1970	
SCALE: 1 INCH = 400 FT.	DATE: DECEMBER 1970
DRAWN BY: R.D.L.	CHECKED BY: A.B.
DRWG NO: 70-190	DE



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